

**Alcohol-Related Collateral Harm, the unseen dimension?**

**Survey of students aged 16-24 in Southern England**

**Abbreviated title: Alcohol-Related Collateral Harm and young adults**

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# Alcohol-Related Collateral Harm, the unseen dimension? Survey of students aged 16-24 in Southern England

## ABSTRACT

**Aim:** To ascertain young adults' experience of alcohol-related collateral harm (ARC harm).

**Methods:** An on-line survey collected quantitative and qualitative data from a convenience sample of students (N=450) aged 16-24 in Southern England. Questions and analyses focused on harms they had experienced as a result of alcohol consumption by other people in their family or social circle.

**Findings:** 64% of participants experienced ARC harm, including 50% of non-drinkers. In logistic regression analysis, ARC harms were associated with being female (OR=1.62, 95% CI 1.01-2.62) family members who drank every day (OR=2.65, 95% CI 1.49-4.69) being influenced by others' drinking (OR=2.03, 95% CI 1.32-3.10) being older (OR=2.61 95% CI 1.57-4.34). No significant associations were found with high or low self-reported levels of alcohol consumption. Using qualitative descriptors, the ARC harms reported were classified into a novel taxonomy comprising eight categories: Nuisance/frustration/exasperation, Tolerance/adjustment/accommodation, Pressure into unwanted situations, Unsought/inappropriate responsibility, Psychological harm; Physical harm/acute risk of physical harm, Relationship harm, and Undisclosed harm.

**Conclusions:** A high level of ARC harm was reported and experience of ARC harm was linked to several predictors. Further work is required to validate the proposed taxonomy, and to promote consideration of the phenomenon of ARC harm in alcohol policy.

**Key words:** Alcohol, young adults, collateral harm

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## Alcohol-Related Collateral Harm, the unseen dimension?

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### INTRODUCTION

Alcohol-related harm is a major public health challenge and any panorama of alcohol misuse reveals that people who drink too much often harm others as well as themselves (Klingemann & Gmel, 2001; Gmel & Rehm, 2003; Karlsson et al, 2010). Yet, in the United Kingdom while alcohol-related harms to drinkers are universally acknowledged to be a public health issue and statistics on drinkers are reported routinely, e.g. (HSCIC, 2015) the alcohol-related collateral harms to the people around the drinker are not recognised to the same extent. Paucity of information and poor characterisation of these harms contribute to the current low level of recognition of them as a collective phenomenon. The UK Government recognises some constituent elements of these harms to people other than the drinker individually, e.g. drinking in pregnancy and Foetal Alcohol Syndrome (Hopkins, 2011). Research has also often focused on single constituent parts, such as alcohol-related violence (Cherpitel, 2012; Hughes et al, 2008) and long-standing in-depth research has addressed aspects such as alcohol addiction and the family over several years, e.g. (Orford, 2005; Orford et al., 2010). Grouping together all the harms that drinkers do to the people around them is a relatively recent development. These combined harms that drinkers do to others have been considered by the World Health Organization (WHO, 2011) and WHO identifies *Harm from Others' Drinking* as a key element of its Research Initiative on Alcohol, Health and Development that features in its Global Status reports (WHO, 2014). Several different terms have been used in research to describe these harms around the drinker e.g. *Externalities from alcohol*

*consumption* (Greenfield et al, 2009) *Second-hand drinking* (Greenfield et al, 2014) *Alcohol's harm to others* (Room et al, 2010) *Collateral damage* (Giesbrecht et al, 2010) and *Collateral harm* (Seid et al., 2015). In this study, the term *Alcohol-Related Collateral harm* (ARC harm) is used to describe this phenomenon. *ARC harm* provides a useful portmanteau acronym and a metaphor for the circle around the drinker within which these harms occur.

WHO recognition prompted more research interest into the harm that drinkers do to other people, and there is considerable scope for this to be developed further. What is known about the current prevalence of in the UK was described for the first time in the research report *Alcohol's Harm to Others* (Gell et al., 2015) which reported on Scotland and the North West of England. Internationally, there is a more established research base and there has also been a growing amount of research in recent years, e.g. in the USA (Greenfield et al, 2014) in Australia (Laslett et al., 2011) and in northern Europe (Hope, 2014; Ramstedt et al. 2015). Nevertheless, recognition and the conceptualisation of ARC harm beyond these academic circles is limited and the dimension represented by these harms around the drinker warrants greater attention. The study's focus on young adults stems in part from Government policy on alcohol-related harms in the UK, which targets harms to the drinker, rather than the broader societal concerns posed by ARC harm (CMO, 2009; CMO 2016; DH, 2012; HO, 2012). As most alcohol-related harms to the drinker are cumulative and manifest in later life (e.g. heart disease, cirrhosis, cancers) the policy focus on harms to the drinker also effectively marginalises the young adult population group. Yet alcohol is the most acute area of lifestyle risk and the leading cause of death for young adults. Almost 25% of all deaths of 16-24 year-olds have been attributed to alcohol (NWPHO, 2008). Additionally, although recent estimates show a decline in binge drinking for this age group (ONS, 2015a) the impact of the

drinking behaviours of young adults, and of students in particular, on themselves and on others, remains an ongoing issue (O'Neill et al, 2015). Young adults also appear disproportionately in national data on the ARC harms of alcohol-related street violence and crime (ONS, 2015b).

This study aimed to explore the phenomenon of ARC harm as experienced by a population of young adult university and college students in the United Kingdom in the context of their knowledge and behaviours around alcohol. In particular, the study aimed to assess the extent and types of ARC harm experienced, to explore associations with potential predictors and to derive a typology of ARC harms for this population group.

## METHODOLOGY

### Design

A cross-sectional survey was used, with questions on experiences of ARC harm, the types and prevalence of those experiences and on behaviours around alcohol consumption. Participants were asked the same questions in the same order and specific demographic information was collected. Survey questions drew on previously validated survey formats (e.g. from the Office for National Statistics). Specific questions were devised to capture participants' knowledge and experiences of ARC harm and the influence of other people on their drinking habits. Data collection was through a confidential, web-based questionnaire that allocated a unique identifier to each respondent (Qualtrics, 2015). Survey questions required either binary responses or used a Likert scale to obtain categorical data on participants' experiences of ARC harm and their attitudes and behaviours around alcohol.

Free text boxes provided participants with the opportunity to add depth to their answers by supplementing them with detail of the ARC harms experienced.

## Sample

The study used a convenience sample of young adult students from one university and two sixth-form colleges in Southern England. The inclusion criteria were: being a student, aged 16-24, studying at A-level (international baccalaureate level) or engaged in a course of undergraduate or post-graduate study. Such educated young adults now comprise almost half of the 16-24 population group in England (DfES, 2015). The target age range of 16-24 was selected to align with the Office for National Statistics defined 'young adults' age range (e.g. ONS, 2016) to facilitate comparisons with other national indicators for this population group. A total of 516 survey questionnaires were returned. 66 responses from outside the target age range, or which were insufficiently completed, were excluded. The study sample thus comprised 450 university and A-level students. Of these, 316 were female and 134 were male, with a lower response from males at university (college: male 72, female 60; university: male 62, female 256). Although the study was promoted widely, the proportion of the college and university students who saw the invitation to participate is unknown. Therefore, a response rate cannot be calculated.

## Procedure

The survey format was piloted to test it for logical flow and correct data outputs. The survey was launched on a dedicated website and was live between November 2013 and March 2014. University and college students aged 16-24 were invited to participate by several means, including widespread distribution of paper and electronic flyers and posters, and

presentations across a range of study disciplines with collaboration from lecturers and teachers. Ongoing proactive recruitment was continued throughout the period of survey deployment to maintain the flow of returns.

Two specific survey questions ascertained whether participants had experienced ARC harm. Participants were asked whether their health or safety had ever been put at risk by others' drinking and then, separately, they were asked whether the drinking habits of anyone else had ever affected them in any other way. Responses to these two questions together were used as the test for ARC harm. Participants were also asked whether their friends or family affected their decision to drink or not to drink alcohol. Qualitative information on participants' experiences of ARC harm was collected from free text boxes attached to these three survey questions. Participants were invited to use these boxes to expand their answers by the prompt 'Why do you say that?' The examples of ARC harm analysed were thus volunteered by, and relevant to, the participants themselves. Other questions tested participants' knowledge and practice around alcohol consumption. Quantitative data were subjected to statistical analyses and qualitative data were coded and organised systematically into categories.

Ethical approval for the study was obtained before recruitment for the pilot from the University Research Ethics Committee (UREC) of Oxford Brookes University (UREC Ref No: 130743). Students were under no obligation to participate in the survey and participants were assured that taking part would have no bearing on their grades. Participation was incentivised by offering the chance to win a £50 Amazon voucher. All information provided in the survey responses was kept confidential (subject to legal limitations). Data were secured in password protected computer files and designated locked cabinets for paperwork.



Once analysis was complete, the study data were anonymised and retained in accordance with the University's policy on Academic Integrity.

### Measures and analysis

Data collected by the survey were predominantly quantitative, prompted either by binary 'yes' 'no' questions or multiple choice using a Likert scale. Excel, Qualtrics (Qualtrics, 2015) and SPSS (SPSS, 2013) were used for descriptive and inferential statistical analyses. The analyses undertaken provided an indication of the main drivers for ARC harm within the study sample. Descriptive statistics were used to summarise the data and included non-parametric chi-squared tests of association between independent predictors and experience of ARC harms. As there were multiple comparisons, significance levels were set at 99% (a Bonferroni-like correction (Abdi, 2007)). With the focus on participants' exposure to ARC harm as the dependent variable, gender, age, alcohol consumption, family and friends, domicile and college or university status were examined for associations as potentially explanatory variables that might affect ARC harm. These univariate analyses provide useful information about the relationship between variables. In a multivariate logistic regression all the potential predictor variables were entered simultaneously into the analysis, and odds ratios and 95% confidence intervals provide effect size information for each variable. Several variables that were significant in univariate analysis were no longer significant in the multivariate logistic regression because of collinearity. However, we cannot conclude that the most important predictors were singled out in the statistical analysis, and the univariate analysis provides useful information about individual associations that is helpful when considering collinearity (for example age, domicile and college or university status as collinear variables). Qualitative data were coded and categorised systematically to identify

the types of ARC harm experienced and the relative frequencies of each type of harm identified were used to derive additional categorical statistics for analysis.

## RESULTS

### Alcohol-related demographic of study sample

Alcohol consumption featured strongly as a behaviour reported by the survey sample of young adults. 85% of the survey participants reported that they drank alcohol, against the national benchmark of 73% for young adults (ONS, 2015a). 94% had close friends who drank alcohol, 79% stated that alcohol played a role in their lives and 51% said they did not always keep within the guidelines and sometimes got drunk. 89% of participants had close family members who drank alcohol and 22% had close family members who drank alcohol every day. The mean number of units of alcohol participants consumed in the week before taking the survey were reported as: male 7.8 units and female 9.1 units (college: male 7.0, female 6.1, university: male 8.8, female 9.8). A national report shows mean weekly units as: male 14.1 and female 8.2 in the young adult age group (HSCIC, 2012). This suggests that females at university in the sample were drinking slightly above the national mean. This finding is consonant with other studies that report female university students having comparatively high levels of alcohol consumption, e.g. (Young et al, 2005; Bartoli et al, 2014). The comparatively low mean for male participants is likely to be a function of the gender skew in the sample; 72 of the 134 male participants (54%) were at college and likely to be under the legal age for purchasing alcohol.

## ARC harm: Knowledge and experience

Knowledge of alcohol-related harms caused by other peoples' drinking was high; 83% of the survey sample stated that they had heard of it. However, this level of awareness seemed not to confer protection and participants reported a significant level of ARC harm experiences. When asked whether their own health or safety had been put at risk by others' drinking, 47% of participants answered 'yes' (college students 39%; university students 51%). When asked whether the drinking habits of others had ever affected them in any other way, 47% of participants answered 'yes' (college students 36%; university students 52%). Overall, 64% of participants (college students 52%; university students 69%) answered yes to either or both questions, indicating that their own health or safety had been put at risk by others' drinking and/or that they had been affected adversely by others' drinking in another way. The responses to these two specific survey questions that test for ARC harm are strongly associated with each other. 64% (135/212) of participants whose health had been put at risk by other peoples' drinking had also been affected by others' drinking in another way; a considerable overlap between the two measures of ARC harm. In comparison, just 32% (76/238) of participants whose health and safety had not been put at risk by other peoples' drinking had been affected by other peoples' drinking in another way ( $\chi^2 = 45.38$ ,  $df = 1$ ,  $p < 0.001$ ).

Table 1. Experience of ARC harm: analysis of independent variables

## ARC harm: Association with gender

Gender was strongly associated with ARC harm. In Table 1 at A, 69% of young adult women have experienced ARC harm, compared with just 53% of young adult men ( $\chi^2=10.05$ ,  $df=1$ ,  $p<0.0020$ ). The multivariate logistic regression undertaken supports this finding (OR=1.62, 95% CI 1.01-2.62). That is, being a young adult woman may be a risk factor for ARC harm.

#### ARC harm: Absent association with alcohol consumption

Two instances where associations with participants' experience of ARC harm might have been anticipated, but which are not supported adequately by the data, are shown in Table 1 at B and C. Table 1 at B compares experience of ARC harm for drinkers and non-drinkers. The table shows that more drinkers (66%) experience ARC harm than non-drinkers (50%). However, this just fails to be significant ( $\chi^2=6.58$ ,  $df=1$ ,  $p=0.0103$ ) and the multivariate logistic regression analysis supports this finding (OR=1.48, 95% CI 0.79-2.78). This demonstrates that, for these well-educated young adults, being teetotal may not confer protection from ARC harm. ARC harm was also tested for association within the UK Chief Medical Officers' guidelines for lower-risk weekly limits (DH, 2012) (then 21 units or fewer for females, 28 units or fewer for males). Table 1 at C shows no association between an experience of ARC harm and drinking above or below the guidelines ( $\chi^2=0.686$ ,  $df=1$ ,  $p=0.408$ ). The logistic regression analysis supports this finding (OR=1.20, 95% CI 0.55-2.61). That is, there was no significant difference between heavier drinkers and moderate drinkers in their chance of experiencing ARC harm

#### ARC harm: Effect of family members' drinking

The findings in Table 1 at D and E should be viewed together and the results compared. Table 1 at D cross tabulates the experience of ARC harm with *Do your close family members drink alcohol at all?* The data show no significant association ( $\chi^2=2.44$ ,  $df=1$ ,  $p=0.118$ ), with the univariate finding supported by the logistic regression (OR=0.99, 95% CI 0.50-1.99). However, at E when experiences of ARC harm are cross tabulated against *Do your close family members drink alcohol every day?* this yields strong evidence of an association ( $\chi^2=12.79$ ,  $df=1$ ,  $p<0.001$ ). This is also supported by the logistic regression (OR=2.65, 95% CI 1.49-4.69). While there is no association between close family members drinking alcohol and ARC harm to participants, there is a strong association when close family members drank alcohol every day. This finding suggests that close family members' drinking frequency is a risk factor for ARC harm experiences among young adults.

#### ARC harm: Association with the influence of others

Table 1 at F shows that 73% of the participants who reported that the drinking habits of their friends and family affected their own decision to drink or not drink had experienced ARC harms, compared with 51% who said they were not influenced by the drinking habits of others. There is a significant association ( $\chi^2=20.93$ ,  $df=1$ ,  $p<0.001$ ) supported by the logistic regression (OR=2.03, 95% CI 1.32-3.10) suggesting that others who influence young adults' decisions to drink are a potential risk factor for ARC harm.

#### ARC harm: Association with age

Experience of ARC harm was strongly associated with age, with older students reporting more experiences of ARC harm than younger students. Table 1 at G shows that 50% (80/160) of participants aged 16 - 18 had experienced ARC harm, against 72% (208/290) of those aged 19 - 24 ( $\chi^2=21.12$ ,  $df=1$ ,  $p=0.001$ ). The logistic regression supports this finding (OR=2.61, 95% CI 1.57-4.34). The gender divide was also much more pronounced in the 16 - 18 age group, where (59%) of the young women had experienced ARC harm, but only (33%) of the young men ( $\chi^2=9.94$ ,  $df=1$ ,  $p=0.002$ ).

#### ARC harm: College, university and domicile associations

Table 1 at H suggests that university students were more likely to have experienced ARC harm than sixth-form college students. Whereas 52% (63/132) of the college participants had experienced ARC harm, 69% (99/318) of those at university had experienced it ( $\chi^2=11.15$ ,  $df=1$ ,  $p=0.001$ ). However, this association is probably confounded with age, since in multivariate logistic regression analysis the OR was 0.74, 95% CI 0.33-1.64. Similarly, in Table 1 at I, participants who lived with their parents were less likely to have experienced ARC harm (56%, 97/174) than those living away from the parental home (69%, 191/276) ( $\chi^2=8.39$ ,  $df=1$ ,  $p=0.004$ ). Again, the OR derived from the logistic regression suggests a potential confounding with age (OR=1.14, 95% CI 0.59-2.22).

#### Categorising the ARC harm experiences

The qualitative data elicited in the free text boxes of the survey provided information on the types of ARC harm experienced and the impact these had on participants' lives. Participants

volunteered examples of both physical and psychological ARC harms drawing on their own experiences. These examples of ARC harm revealed a variety of types of experience and a range in the severity of the experiences described, from the relatively minor, e.g. noisy disruptions to sleep or study, to more serious concerns, including risks to life and bereavement. The examples of ARC harm described were categorised into a novel taxonomy of ARC harms for these well-educated young adults (Table 2). The taxonomy comprises eight categories, briefly: nuisance, tolerance, pressure, unsought responsibility, psychological harm, physical harm, relationship harm, and undisclosed harm. The ‘undisclosed harm’ group relates to 15 participants who declined to disclose details of the ARC harm they had experienced, suggesting sensitivity around the nature of ARC harm in this population group.

#### ARC harm and the influence of others on decisions to drink or not drink

60% of the 450 survey participants reported that the drinking habits of friends and/or family affected their decision to drink or not drink (41% stated that other peoples’ drinking habits encouraged them to drink more, 10% stated that others’ drinking made them drink less and 9% reported that others influenced them in both directions). Where other peoples’ drinking acted as a deterrent, a wish not to emulate a heavy drinker was most often cited as the deterring factor, e.g. “Family friend died from kidney failure I believe. Heavy drinker - probably put me off.”. The influence to drink more was expressed as peer pressure in some instances, e.g. “Friends pressure you into drinking sometimes”. In others, it was expressed as normal sociability, e.g. “If everybody else is going to drink you drink”. In other instances, there was interplay between these, e.g. “My friends often tempt me into drinking and going out more”. Encouragement to drink more is not counted as an ARC harm for the purposes of

this study as the point at which normal sociability and personal volition progressed to ARC harm is unclear. Nevertheless, as there is a point at which pressure to drink more progresses to ARC harm, it is mentioned in the categorisation of types of ARC harm under ‘Pressure into unwanted situations’ in the taxonomy in Table 2.

Table 2. Taxonomy of ARC harm experienced by young adults (categorisation, definitions and examples).

ARC harm, impact on health and safety: Most frequent types of experience

The examples of ARC harm affecting participants’ health or safety were examined to assess the frequency with which each occurred and the risks entailed. The most frequently cited example of ARC harm affecting health or safety in answer to the prompt, ‘Why do you say that?’, was of aggressive and/or violent behaviour on the part of the drinker. 41% (86) of the 212 participants who stated that their health and safety had been put at risk specifically referred to this. e.g. “I have been attacked by a drunk person before and have had many near fights with drunk men who become violent when under the influence. I have been threatened to be stabbed by a drunk man”. (Nationally, the 16-24 age group suffers the highest level of violent crime and 53% of their attackers are drunk (ONS, 2015b)). The second most frequently cited experience of ARC harm relating to a risk to health or safety was drink driving. 26% (56) of participants reported being put at risk by a drunk driver e.g. “I have witnessed and was nearly involved in a road traffic collision caused by a driver who was heavily under the influence of alcohol”. The third most cited example of a risk to health or safety was looking after friends or family members who were drunk, with 10% (21) of these



participants reporting that taking on this responsibility had put their health or safety at risk, e.g. “Could not get taxi home because friend was so drunk so outside in the cold and dark for a very long time” and “Trying to keep intoxicated people from doing something stupid and risking my own safety”.

In six instances participants excused the ARC harms that had affected their health or safety (e.g. “Most people can turn quite nasty when they’ve been drinking” “I’ve realised they were drunk and did not know what they were doing”) or discounted them (e.g. “It was just a moment of madness” “I don’t see this as much of a problem though because strangely it’s part of the entertainment of ‘going out’”). This tendency to accept ARC harm also featured in 25 instances where participants reported that they had never experienced any ARC harms; stating their reason as ‘nothing serious’, or equivalent, in answer to the prompt ‘Why do you say that?’

#### ARC harm, other impacts: Most frequent types of experience

When asked whether the alcohol consumption of others had ever affected them in any other way, participants most frequently reported being drawn into an argument by a drinker. Of the 211 participants who reported an experience of ARC harm that caused other negative impacts, 48% (101) referred to being drawn into arguments in the free text box attached to this question. The experiences described cover a range of severity, e.g. “I’ve been in my fair share of alcohol involved arguments and confrontations that wouldn’t of happened if alcohol was not present” and “My uncle is an alcoholic so, yes I got in some arguments with him. But now I know that I should ignore him or leave when he is in this ‘mood’”. Participants’ responses indicate that they accept and tolerate this behaviour from drinkers, e.g. “I have a

very argumentative friend that manages to start a fight every night. Stopping these fights have often gotten me into trouble.” 21% (44) participants reported effects on their sleep and/or studies from others’ drinking, stating for example: “I have had to stay up with a friend when she was drunk and this meant I was very tired and wasn’t able to complete my work the next day because I was catching up on sleep”. 17% (36) of participants mentioned worry and or stress caused by family members’ or friends’ drinking habits. E.g. “My ex-boyfriend drank a lot and his father was an alcoholic, it was pretty traumatising to witness him turn to alcohol when he needed comforting, rather than his family or myself who always let him know we were there for him.” These other ARC harms reveal a more diverse and less acute range of risks than those posed by the ARC harms affecting health or safety and a wider variation in the degree of ARC harm experienced. Some instances of ARC harm described, like disturbed sleep or an argument, appear relatively minor as single events. However, participants signal a longer-term cumulative effect when they describe action taken to avoid repeated ‘minor’ ARC harms e.g. “Made me move out of student halls to live back at home”. Participants’ descriptions of repeated ARC harm incidents, minor or otherwise, also signal chronic stress, e.g. “My dad drinks every night and it upsets me” and “Frequent arguments with mother after she has been drinking”. Such examples suggest the presence of more insidious and longer-term psychological harm.

## DISCUSSION AND CONCLUSIONS

This study provides empirical evidence of the ARC harm experienced by a sample of young adult students in Southern England. The analyses of the quantitative and qualitative data collected provide a conceptualisation of ARC harm that is relevant to these young adults.

The study shows that a substantial proportion of these young adult students have been exposed to ARC harm. This is regardless of their own drinking status, since abstainers and moderate drinkers, as well as heavier drinkers, experienced ARC harm. The findings on the lack of an association between ARC harm and the quantity of alcohol consumed contrast with alcohol-related harms that drinkers do to themselves, which are positively correlated with the quantity of alcohol consumed (DH, 2016). They also contrast with other studies which have reported associations with the amount of alcohol consumed (e.g. Greenfield et al 2015). If ARC harm is not associated with alcohol consumption per se for these young adults, this suggests that the precipitating factors for the ARC harm they experience lie elsewhere. The data suggest that two of the main drivers for ARC harm in the study sample are having family members who drink every day and being influenced by family and friends' drinking habits. Further research might examine behavioural, societal or environmental influences.

The data suggest that young women are at greater risk of ARC harm than young men and that they are at risk earlier in their lives, whilst still living in the parental home and before entering university. Other studies have reported a more complex and mixed gender division (e.g. Laslett et al., 2011) while some have also reported higher levels of ARC harm for young women (e.g. Huhtanen & Tigerstedt, 2012). Overall, the data suggest a significant increase in the risk of ARC harm for participants after the age of 18, at the transition point of leaving the parental home and entering university life. The analyses undertaken suggest that age is the most significant of these three factors. Nevertheless, the effect is not a function of age alone since the data show significant collinearities for these three factors and they all occur at the same point in participants' lives. Thus, the increase in risk suggested at this stage of participants' lives can be said to be a function of age, domicile and entering higher education.

The ARC harm experiences described vary in severity, from relatively minor harms to serious harms including risks to life and bereavement. Participant responses suggest a degree of tolerance of ARC harm whilst, at the same time, its effects are felt keenly and participant descriptions of repeated minor harms suggest an increased impact linked to the frequency with which they occur. Participant descriptions of pressure from others to drink more alcohol as an ARC harm cannot be distinguished satisfactorily from participants' personal volition to drink from the study findings. There is also an unresolved tension between the desirable effects of alcohol, which are sought by the 79% of participants who report that alcohol plays a role in their lives, and the undesirable consequences they report from other people's drinking and further research might examine these areas.

This study contributes information to the current understanding of the totality of alcohol-related harm and invites better public and policy recognition of ARC harm as an identifiable phenomenon. The findings provide a contribution to characterising the nature of ARC harm by examining it in this population group. Insights are gained into the types and extent of the ARC harms that are specific to these educated young adults and into the way that they themselves perceive them. Questions are raised about the predisposing factors that may give rise to ARC harms, the environment in which they occur and the extent to which ARC harms may contribute to the overall level of alcohol-related risk for young adults. Again, further research might examine behavioural, societal or environmental influences.

Although this study was conducted in one geographical location in Southern England, the findings may have wider relevance, with implications for other sixth-form colleges and universities around the country, and possibly in other countries. A potential practical application would be to use the study findings to frame a preventive public health intervention for ARC harm relevant to the experiences of young adults. Such an intervention

might be deployed to first year students on entering university to alert them to the risks of ARC harm and to provide them with tactics to confer protection or mitigate those risks.

### Limitations

The cross-sectional design, the convenience sample and the single geographical location limit the extent to which the study findings may be generalised. The findings are subject to self-report bias, mitigated by participant anonymity. In the absence of a recognised measure for the severity of ARC harm, interpreting the degree of harm is reliant on descriptions of those harms. Causality for ARC harm cannot be inferred from the study findings. This should be the object of future studies.

### Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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**Table 1: Experience of ARC harm: analyses of independent variables**

		Experience of ARC harm (N= 450). (288/450 participants experienced ARC harm)		ORs derived from logistic regression with 95% CI.	
Variable		Frequency		% Yes	
		Yes	No		
A. Gender	Male	71	63	53%	
	Female	217	99	69%	
	Total	288	162	64%	
		$\chi^2=10.05$ , df=1, p<0.002		OR=1.62, CI 1.01-2.62 (Female: Male)	
B. Do you drink alcohol at all currently? (Regularly or occasionally)	Yes	255	129	66%	
	No	33	33	50%	
	Total	288	162	64%	
		$\chi^2=6.58$ , df=1, p=0.0103		OR=1.48, CI 0.79-2.78 (Yes: No)	
C. Self- reported number of units of alcohol consumed in the last week within UK guidelines?	Yes	260	150	63%	
	No	28	12	70%	
	Total	288	162	64%	
		$\chi^2=0.69$ , df=1, p= 0.408		OR=1.20, 95% CI 0.55-2.61 (No: Yes)	
D. Do your close family members drink alcohol at all?	Yes	261	139	65%	
	No	27	23	54%	
	Total	288	162	64%	

$\chi^2=2.44$ , df=1, p=0.118      OR=0.99, CI 0.50-1.99 (Yes: No)				
E. Do your close family members drink alcohol every day?	Yes	80	20	80%
	No	208	142	60%
	Total	288	162	64%
$\chi^2=12.79$ , df=1, p<0.001      OR=2.65, CI 1.49-4.69 (Yes: No)				
F. Do the drinking habits of friends or family affect your decision to have a drink or not to drink?	Yes	195	74	73%
	No	93	88	51%
	Total	288	162	64%
$\chi^2=20.93$ , df=1, p< 0.001      OR=2.03, CI 1.32-3.10 (Yes: No)				
G. Aged under 19 years of age? (16-18)	Yes	80	80	50%
	No	208	82	72%
	Total	288	162	64%
$\chi^2=21.12$ , df=1, p<0.001      OR=2.61, CI 1.57-4.34 (No: Yes)				
H. Student at college or university?	College	69	63	52%
	University	219	99	69%
	Total	288	162	64%
$\chi^2=11.15$ , df=1, p=0.001      OR=0.74, CI 0.33-1.64 (University: College)				
I. Living in the parental home?	Yes	97	77	56%
	No	191	85	69%
	Total	288	162	64%
$\chi^2=8.39$ , df=1, p=0.004      OR=1.14, CI 0.59-2.22 (No: Yes)				

The  $\chi^2$  and corresponding p values derive from univariate analyses of factors thought likely to have an association with ARC harm. These factors were used as the potential predictor variables in the subsequent multivariate logistic regression. The ORs and CIs reported result from that logistic regression.



**Table 2. Taxonomy of ARC harm experienced by young adults (categorisation, definitions and examples).**

Category and definition of each type of ARC harm as experienced by young adult students.	Examples (Selected illustrative quotes)
<p><b>1. Nuisance/ frustration/exasperation</b>  Direct, immediate impacts on everyday life. Includes disturbed sleep and/or effects on study and work from drunken noisy, careless, disruptive, friends, flatmates or family.</p>	<p><i>Housemates in halls went out most nights and woke me up often, even the night before exams.</i></p> <p><i>I got many detentions from where my mum was too drunk to sign my homework diary. She also used to keep me up at night, was more out of control and ripped up my homework.</i></p>
<p><b>2. Tolerance/adjustment/accommodation</b>  Personal tolerance and/or adjustments to unacceptable behaviour by drinkers in the family or social circle. Includes the need to avoid drunks and places where people get drunk and to accommodate being excluded from social activities by heavier drinkers.</p>	<p><i>I had to move out of my student halls because my hallmates were so out of control with their drinking.</i></p> <p><i>When my friends get drunk and walk off without me I'm left on my own to walk home in the early hours of the morning.</i></p>
<p><b>3. Pressure into unwanted situations</b>  Pressure in the form of threats or unwelcome attention leading to unwanted situations, resulting in unsolicited arguments or objectionable sexual behaviour from drinkers. Pressure from peers who encourage drinking a large quantity of alcohol as 'normal'</p>	<p><i>I have been ill from drinking too much and trying to keep up with my friends.</i></p> <p><i>Drunk people have started arguments with me in clubs for no apparent reasons, and drunk men always try to touch you up, so you end up getting aggressive with them too.</i></p>
<p><b>4. Unsought/inappropriate responsibility</b></p>	<p><i>I've had to help severely drunk people be sick,</i></p>

<p>Care required by drunken friends and family members. Includes risks to personal safety to do so, and taking friends/family to A&amp;E for emergency hospital care.</p>	<p><i>carry them to their rooms, stay hydrated with water rather than have fun at parties.</i></p> <p><i>I've had to look after people that have been very drunk and hard to handle. They take a great deal of looking after and they cannot be left alone at any point.</i></p>
<p><b>5. Psychological harm</b> Acute or longer term worry/stress caused by or about the drinker. Threat of violence, arguments, tension, embarrassment, loss. Includes bereavement resulting from drinkers' behaviour.</p>	<p><i>I've had to diffuse fights on many occasions, and I've argued with my partner because he's been too drunk.</i></p> <p><i>My dad is dead due to alcohol. He was an alcoholic and hanged himself one night whilst he was drunk.</i></p>
<p><b>6. Physical harm / acute risk of physical harm</b> Personal injury sustained in a malign violent attack (or unintentionally caused) by a known or unknown drinker. Includes drink-spiking and acute risk of physical injury, e.g. drunk-driver incidents.</p>	<p><i>One of these incidents included a thug shattering a glass over my head and causing my fiancée to have a small anxiety attack due to the amount of blood.</i></p> <p><i>I have been attacked by a drunk person before and have had many near fights with drunk men who become violent when under the influence. I have been threatened to be stabbed by a drunk man.</i></p>
<p><b>7. Relationship harm</b> Negative effect on relationships. Arguments, rifts and/or chronic degradation caused by behaviour of drinking friends, partners or family members.</p>	<p><i>One of my friends' mood drops dramatically when drinking and this causes me stress.</i></p> <p><i>My parents were drunken and abusive.</i></p>
<p><b>8. Undisclosed harm</b> Details of harm declined. (Speculatively, shame/guilt /personal embarrassment attaching to the ARC harms</p>	<p><i>Rather not say personal issue.</i></p>

experienced leading to concealment).

*It has and I'm not going to delve any deeper into  
that information.*